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United States
Department of
Agriculture

Marketing and
Regulatory
Programs

Agricultural
Marketing
Service

Livestock and
Seed Program

Items of Interest in Seed Control

Fall 2001

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MAIL IRRADIATION AND SEED

As you are well aware, the postal system in the United States has been used to disperse anthrax spores. Irradiation to treat the mail is among the safety measures that are being used to prevent death and illness from anthrax spores.

Questions have arisen as to how irradiation will affect seeds that are sent to customers and laboratories through the mail.

The American Seed Trade Association (ASTA) has given us permission to excerpt a portion of correspondence that Leslie Cahill of ASTA has received from Michael Stern, Director, Technological Applications for Titan Scan Technologies. Stern's response was sent in reply to questions that ASTA asked of his company. Part of Stern's reply follows:

The effects of ionizing radiation on living matter are characterized by cellular destruction stemming from the disruption of the genetic material. That is, the radiation-induced cleavage of chemical bonds in the cell's DNA results in the inability of the cell to reproduce. On the organism level, the cellular inability to reproduce results in death of the organism. Therefore, for example, live plants would not likely survive e-beam irradiation. Similarly, the ability of seeds to germinate properly after being irradiated may also be impacted.

To determine the effect of irradiation on seed, the Seed Regulatory and Testing Branch tested samples of alfalfa, annual ryegrass, barley, garden bean, onion, pea, squash, and tomato seed. Comparative germination tests were made between portions of seed lots that had been irradiated at the same irradiation level expected to be used on the mail and portions of the same lots that had not been irradiated. For each of the kinds tested, the irradiated portions of the lots had a zero percent germination. The non-irradiated vegetable kinds all tested at a rate above the standard for the respective kind. The non-irradiated alfalfa, annual ryegrass, and barley samples each had germination results 95 percent or higher.

The detrimental effect of irradiation on seed viability is evident from our results.

At this time, carriers such as FedEx and UPS have not announced any plans to irradiate packages sent via their service. These types of carriers could provide an alternative means of shipping seeds and other items that would be damaged by irradiation.

NEW ASSOCIATE DEPUTY ADMINISTRATORS

Randall Jones has been named an Associate Deputy Administrator for the Livestock and Seed Program (LSP). He replaces Robert Leverette who recently retired. Oversight of the Seed Regulatory and Testing Branch will be part of Jones' duties and responsibilities. He came to the LSP from USDA Farm Service Agency.

William Sessions was named as the other LSP Associate Deputy Administrator. He replaces Barbara Cope who retired at the end of October. Sessions was promoted from within the LSP.

NORTHEAST SEED ANALYSTS WORKSHOP

Seed Regulatory and Testing Branch Botanists David Bitzel and Patsy Jackson traveled to Harrisburg, PA, to attend the Northeast Seed Analysts Workshop (NESAW) hosted September 20-21, 2001, by the Pennsylvania Department of Agriculture.

Bitzel presented information on procedures to evaluate abnormal garden bean seedlings and demonstrated a proposed ryegrass fluorescence grow-out procedure. Representatives of State seed laboratories of the Maryland Department of Agriculture, New Jersey Department of Agriculture, New York Department of Agriculture and Markets, North Carolina Department of Agriculture and Consumer Services, Pennsylvania Department of Agriculture, and Virginia Department of Agriculture and Consumer Services attended as well as representatives of the seed companies Johnny's Selected Seeds and Seedway, Inc.

Highlighting this year's workshop was the demonstration of the identification of annual and perennial ryegrass using High Pressure Liquid Chromatography. Marcello Mangano of the New Jersey Department of Agriculture demonstrated how this is accomplished and the potential for its use in detecting annual ryegrass seed mixed in perennial ryegrass.

We thank the Pennsylvania Department of Agriculture for hosting this year's NESAW meeting. They will also be hosting next year's meeting. Since 1979, NESAW has met annually for the purpose of promoting uniformity in seed testing and exploring new technologies. By the group's preference, NESAW is unstructured in that it has no officers, dues, constitution, or by-laws. State and Federal laboratories volunteer to host the meetings and NESAW participants select the topics covered.

MEETING OF OECD SEED SCHEMES ADVISORY GROUP

Seed Regulatory and Testing Branch Botanist Susan Maxon participated in the meeting of the extended Advisory Group of the Organisation for Economic Co-operation and Development (OECD) Seed Schemes, October 19-20, 2001, in Changins, Switzerland. Also on the U.S. delegation were Kristen Thompson, OECD Program Manager for the Association of Official Seed Certifying Agencies (AOSCA), and Mark Condon, American Seed Trade Association. Discussion of the "Proposal for a Voluntary Experiment on the Validation of GM [genetically-modified] Seed Testing and Its Implication for Seed Certification Rules" dominated the meeting. Revised wording was proposed for several provisions, including the provision regarding threshold levels for data gathering and a new proposal that results of GM seed tests be put on the OECD certificate. The United States will submit written comments to the OECD Secretariat when the draft summary record of the meeting becomes available.

In other business, new species were considered for addition to the Seed Schemes. After submission of the breeder's description for the quackgrass variety Everett, *Elytrigia repens* was added. Because of concerns about the noxious-weed characteristics of the species, action was delayed until the breeder's description was submitted. The breeder's description showed that it filled a unique need on the part of growers. Accelerated consideration is being given to the addition of tufted hairgrass (*Deschampsia caespitosa*). Addition of grass seed mixtures to the Seed Schemes remains under discussion and will be considered again at the annual meeting next year.

Santa Cruz de la Sierra, Bolivia is the location for the annual meeting of the OECD Seed Schemes June 25-28, 2002, the Pan American Seed Seminar July 1-3, and the International Seed Testing Association Extraordinary Meeting July 3-6.

ASTA EXECUTIVE COMMITTEE MEETING

Seed Regulatory and Testing Branch Botanist Susan Maxon participated in the meeting of the Executive Committee of the American Seed Trade Association (ASTA), October 22-23, 2001, in Alexandria, VA. The focus of the meeting was the issue of adventitious presence of biotechnology-derived seeds in non-biotechnology derived varieties of seed.

Adventitious presence is a term that has been coined by the seed industry to refer to the incidental or unintentional occurrence of biotechnology-derived seeds in other varieties.

Disruption of trade caused by adventitious presence is a major concern for the seed industry. Speakers from government and private industry provided a picture of the situation from various perspectives. The meeting culminated with development of a possible approach to deal with adventitious presence.

ATLANTIC SEEDSMEN'S ASSOCIATION CONVENTION

The Atlantic Seedsmen's Association (ASA), a seed industry group, held this year's annual convention in Annapolis, MD. On Tuesday, October 16, 2001, the Maryland Department of Agriculture's Turf and Seed Section hosted the morning session of the ASA meeting.

The group toured Maryland's seed testing laboratory. The tour was followed by a panel discussion. ASA President Bill Dunn introduced the four member panel consisting of Malcolm Sarna, Chief of the Turf and Seed Section; Joe Garvey, Seed Program Supervisor, Pennsylvania Department of Agriculture; Dave Nelson, Executive Secretary, Oregon Seed Council; and Dr. Richard Payne, Chief, USDA Seed Regulatory and Testing Branch (SRTB).

Payne began the panel discussion by discussing the January 11, 2001, amendment to the Federal Seed Act (FSA) that added the Federal noxious-weed seed species to the interstate noxious-weed seeds that are regulated under the FSA. He briefly explained the SRTB service-testing program, a fee-for-service activity covered by the Agricultural Marketing Act. He also explained our involvement in the Organisation for Economic Co-operation and Development (OECD) Seed Schemes program. SRTB Botanist Susan Maxon heads the U.S. delegation to the Seed Schemes.

Payne talked about some of the kinds of violations of the FSA that the SRTB is seeing that involve the northeastern states. For example, substandard lettuce germination is a recurring problem. Possible explanations for the lettuce germination deficiencies are seed analysts overlooking the physiological necrosis that often affects lettuce germination and germination retests being done on retained seed samples that are stored under ideal laboratory conditions as opposed to the less ideal situations where the seed is being stored or sold. The SRTB continues to see problems with mislabeling of undesirable grass seeds (regulated by 6 northeastern states) in lawn seed and lawn seed mixtures. These undesirable grass seeds are often not included in noxious-weed seed examinations or are erroneously classified as other crop seed and consequently missed by the seed labeler. Another lawn seed problem appears to be caused by lack of lot uniformity in that the same seed lot sampled at different locations yields different purity test results. It appears also that the industry sometimes makes erroneous assumptions regarding seed varieties and

kinds, *i.e.*, assuming all red fescue seed from Canada is Boreal red fescue. The SRTB continues to see situations where soybean seed with mixed hilum colors and/or mixed growth-chamber hypocotyl colors are sold as one variety.

Payne introduced new Livestock and Seed Program Associate Deputy Administrator Randall Jones to the participants and also acknowledged SRTB Marketing Specialists Don Dreyer and Steve Hurst who were in attendance.

Garvey's comments primarily involved the recent amendments to the Recommended Uniform State Seed Law (RUSSL). The amendments have included the addition of undesirable grass seed labeling; a 15-month germination period for cool season grass seed and a sell by date for that category of seed; the addition of a 12-month sell by date for vegetable seed and flower seed; the addition of germination standards for many vegetable kinds; and the requirement that relabel stickers show a test date, a lot number, and that vegetable and lawn seed can be relabeled only one time. He reiterated to the group that the Association of American Seed Control Officials (AASCO) supports the proposed ryegrass grow-out method of separating annual and perennial varieties of ryegrass. RUSSL is a guideline that States can use to amend their own laws and regulations. For seed laws to become more uniform throughout the country, it is greatly beneficial when States adopt the RUSSL provisions. It is his opinion that the industry needs to take the lead in pressing for State legislation to make the suggested changes to the individual State laws.

In his comments, Sarna expressed the opinion that the AASCO has become more proactive in addressing issues that have been discussed for many years and that AASCO is moving more quickly to support necessary changes in seed regulation. He also gave the group a "heads up" regarding a possible change to 3-part purity labeling for seed sold in the United States and by U.S. companies. The International Seed Testing Association has used 3-part purity labeling since approximately 1960. *[For more information on 3-part purity, please refer to the Summer 2001 issue of the "Items of Interest in Seed Control." Item 2 of the agenda for the Western Association of Seed Control Officials meeting discusses the 3-part purity labeling.]*

Nelson explained that the Oregon Seed Council is a federation of organizations that have to do with seed production in the state of Oregon. Oregon is the largest producer of cool season grass seed in the United States. He discussed the phasing out of field burning techniques that were used to prepare fields for seed production and the changes the loss of that procedure has made in seed production methods. He encouraged the members to push for adoption of the 15-month germination standard, a standard definition of blends and mixtures, the adoption of a standard grass seed lot size of 55,000 pounds, labeling to show the origin of seed and the purpose for which it is intended, and approval of the grow-out method of differentiating perennial and annual ryegrass. He stressed that the fluorescence test should continue to be used to distinguish annual and perennial ryegrass and that the grow-out test would be used to supplement the fluorescence test if the fluorescence test results exceeded a standard or might result in a mislabeling.

Following the speakers' remarks, the floor was opened for questions. Discussions involved labeling problems, inconsistencies between various State and/or Federal regulations, production methods, genetic modification, and changes in world markets especially European markets.

On October 17, SRTB Seed Marketing Specialist Jeri Irwin attended a meeting on "New Technology" as part of the ASA Convention held in Annapolis.

Francois Korn, founder and President of SeedQuest, gave a presentation on improving access to information for seed professions worldwide. The SeedQuest website can be accessed at <http://www.seedquest.com>.

Kent Carroll of the Trimble Company discussed the technology of the Global Positioning System (GPS). GPS is a radio-navigation system formed from a constellation of 24 satellites and their ground stations. It is like giving every square meter on the planet a unique address. GPS is finding its way to many operations including farm machinery where it has such capabilities as navigating tractors to plant straighter lines so there is more room to plant extra rows. More information about GPS can be found at <http://www.trimble.com>.

The last presenter was Kerry Trout, ASA Webmaster (and ASA Executive Secretary John Baylor's son-in-law). Trout gave an overview of ASA's website and encouraged members to add their logo, name, and a write-up of their organization to their member site. ASA publishes a quarterly newsletter on their website at <http://www.atlanticseedsmen.org>.

RYEGRASS FLUORESCENCE LIST

We have had no changes from the National Grass Variety Review Board (NGVRB) since our last issue.

Perennial Ryegrass Variety Name	Percent Varietal Fluorescence	Perennial Ryegrass Variety Name	Percent Varietal Fluorescence
246	0.27%	Caddieshack	1.57%
2CB	1.97%	Caliente	0.74%
856	0.87%	Calypso	1.29%
89-90	2.15%	Calypso II	0.47%
90-14 ¹	7.12%	Catalina	3.18%
96-KSOS-L-1-PR-WVPB-C-24 ¹	6.50%	Cathedral	0.85%
A+	6.23%	Chaparral	1.62%
Academy	2.33%	Charger II ³	0.54%
Accent	0.56%	Charisma	2.39%
Accolade	4.83%	Chatham ³	2.11%
Accord	4.08%	Churchill	2.93%
Achiever	0.93%	Citation III	0.96%
Admire	2.37%	Commander	1.02%
Advent	0.14%	Cutter	1.65%
Affinity	0.77%	Dancer	0.78%
Affirmed	2.59%	Dandy	2.00%
Agresso	2.00%	Delaware Dwarf	2.60%
AllSport	0.92%	Derby Supreme	2.85%
All*Star	0.47%	Dillon	4.14%
Allaire II	1.15%	Divine	3.09%
APM	0.59%	DS95-201 (Enchanted) ¹	1.12%
Aquarius	0.97%	Edge	1.73%
Archer	1.51%	Elegance	1.51%
A.S.A.P.	1.42%	Elf	0.75%
Ascend	3.09%	Elite	4.84%
ASP410	0.18%	Envy	0.22%
Assure	0.72%	EP37 (Magic II) ¹	1.36%
Bayou ¹	1.33%	EP39 (Pronto II) ¹	1.75%
Bedford	1.40%	Equal	1.98%
Bella	0.65%	Esquire ¹	3.10%
Blackhawk	1.17%	Evening Shade	1.17%
Blazer III	1.18%	Exacta	1.22%
Boardwalk	2.72%	Excel ³	1.53%
Breeze	1.57%	Express	4.00%
Brightstar	1.79%	Extreme	1.32%
Brightstar II ³	2.24%	Fiesta II ³	1.14%
Buccaneer	7.44%	Fiesta 3	1.02%
Buccaneer II	5.48%	Galaxy	1.19%
CIS-MBH	1.27%	Gator	0.88%
C-21	6.28%	Gator II	2.50%

Perennial Ryegrass Variety Name	Percent Varietal Fluorescence	Perennial Ryegrass Variety Name	Percent Varietal Fluorescence
Gettysburg	2.74%	Passport ³	1.06%
Goalkeeper	0.82%	Patriot II	0.42%
Greenland	1.20%	Pearl	1.86%
Grimalda	2.00%	Pegasus	2.41%
Headstart	2.09%	Pennant	0.50%
Imagine	1.31%	Pennant II	1.63%
Jet	0.84%	Phantom	2.19%
Jiffie	6.06%	Pick Lp Q-93 ¹	6.44%
Laredo	0.53%	Pleasure	4.09%
Legacy	0.37%	Pleasure XL	1.11%
LF-100 (Continental) ¹	5.88%	PR8820	0.79%
Lindsay	1.72%	Prelude	1.72%
Line Drive	2.72%	Prelude II	2.25%
Linn	5.00%	Prelude III	0.59%
Lowgrow ³	1.31%	Prizm	0.71%
Lowgrow II	1.35%	Prosport	1.36%
LP22 (Vail) ¹	0.82%	Protocol	4.30%
LRF-94-C8 ¹	0.64%	Protocol II ¹	5.28%
Lynx	4.19%	Prowler	0.21%
MB 49 (Nexus) ¹	2.01%	Quickstart	0.18%
Magic	1.21%	R2	1.25%
Majesty	1.59%	Racer	1.23%
Manhattan II ³	0.65%	Regency	0.99%
Manhattan 3 ³	0.88%	Repell	0.33%
Mardi Gras	1.07%	Repell II ³	1.56%
Monterey	2.64%	Repell III	0.80%
Monterey II	1.94%	Reveille	2.00%
Morningstar	0.87%	Riviera	0.58%
MP5 (PDQ) ¹	4.65%	Riviera II	1.08%
Mulligan	1.86%	Roadrunner	2.53%
Navajo ³	0.37%	Rodeo II	2.47%
Newlinn	5.85%	Rosalin	3.26%
NightHawk	1.39%	Saturn II	0.85%
Nobility	7.53%	Seville ³	0.33%
Nomad	1.03%	Sherwood	1.08%
Nova	1.00%	Shining Star	0.10%
Omega 3	0.73%	Sonata	1.20%
Omni	0.51%	SR 4100 ³	0.37%
Pageant	2.22%	SR 4200	0.34%
Pageant II ¹	3.32%	SR 4500 (SRX NJPR, SRX 4NJPR, SRX 4500) ¹	0.24%
Palmer	1.04%	Stallion Select	2.37%
Palmer II	1.51%	Stallion Supreme	1.16%
Palmer III	0.23%	Stardance	1.90%
Panther	1.18%	Statesman	1.27%
Paragon (MML, TMI-MML) ¹	0.88%		

Perennial Ryegrass Variety Name	Percent Varietal Fluorescence	Perennial Ryegrass Variety Name	Percent Varietal Fluorescence
Statesman II	8.42%	WVPB-PR-RS-2 ¹	1.59%
Sunshine	2.65%	WVPB-XB-2 ¹	26.71%
Target ³	3.28%	WVPB-XP-6 ¹	21.69%
Tonga	11.53%	Yorktown III	1.42%
TopGun	1.15%		
Top Hat	0.77%	Annual	Percent
Topeka	2.34%	Ryegrass	Varietal
Tove	17.48%	Variety Name	Fluorescence
Twister	3.85%		
Vantage	2.19%	Florida 80	98.89%
Vibrant ¹	4.30%	Grazer	99.78%
Vivid	1.24%	Gulf	99.02%
Wilmington	0.17%	Jackson	98.80%
Wind Dance	1.17%	Magnolia ²	---
Wind Star	0.47%	Marshall	96.00%
Wizard ³	2.57%	Passerel Plus	98.83%
WVPB-PR-C-2, C-2 ¹	8.65%	Rio ¹	98.97%
WVPB-93-KFK ¹	3.84%	Surrey	98.91%
WVPB-PR-Koos-95-9		TAM 90	98.45%
(Breeze II) ¹	6.85%		

¹ Experimental Designation and/or Variety.

² Exempt from varietal fluorescence testing calculations.

³ The NGVRB is now listing OECD synonym names. **These names are not acceptable for sale in the United States** and are included for informational purposes. The variety and its OECD synonym shown in italics are: Brightstar II-*Polarstar*, Charger II-*Fairway*, Chatham-*Catia*, Excel-*Romadera*, Fiesta II-*Pickwick*, Lowgrow-*Lex86*, Lowgrow II-*Sunbright*, Manhattan II-*Numan*, Manhattan 3-*Triman*, Navajo-*Comanche*, Passport-*Romeo*, Repel II-*Verdi*, Seville-*Leonardo*, SR4100-*Athena*, Target-*Libra*, and Wizard-*Sardinero*.

ADDRESS AND PERSONNEL CHANGES REQUESTED

Although the "Items of Interest in Seed Control" is now an electronic only publication, paper correspondence still is our primary means of communication with our customers. If you receive other information from us, please keep us informed of any name, title, personnel, or address changes so that we can keep our records current.

Seed control officials: Please tell us when higher level personnel (*i.e.*, Secretaries, Commissioners, Directors, *etc.*) changes are made, including address and title changes, so we can promptly update our records and mailing lists.

SUGGESTIONS FOR THE ITEMS OF INTEREST IN SEED CONTROL

We welcome ideas or articles you feel should be included in this publication. If you wish to submit an article, please send it to:

Don Dreyer
Attention: Items of Interest in Seed Control
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FEDERAL SEED ACT CASES SETTLED

The following cases were settled administratively under the Federal Seed Act between July 1 and September 30, 2001. Under the administrative settlement procedure, the Seed Regulatory and Testing Branch and the firms agreed to settle the cases for the amount specified, with the firms neither admitting nor denying the charges:

- Jonathan Green, Inc., Farmingdale, NJ, has paid \$5,075 for a case involving nine seed shipments. The alleged violations were false labeling of pure seed, other crop seed, weed seed, inert matter, germination, test date, variety name, and noxious-weed seeds; and failure to label the presence of noxious-weed seeds and to keep required records. Seed regulatory officials in Pennsylvania cooperated in the initial sampling and inspection.
- Seed Research of Oregon, Inc., Corvallis, OR, has paid \$1,125 for a case involving three seed shipments. The alleged violations, while not the same for all shipments, were false labeling of noxious-weed seeds, pure seed, other crop seed, weed seed, and test date; and failure to label noxious-weed seeds and to test seeds for germination within the prescribed period prior to interstate shipment. Seed regulatory officials in Maryland and Missouri cooperated in the initial sampling and inspection.

- Tasso Production, Limited d.b.a. C.T. Smith, Ltd., Pleasanton, TX, has paid \$500 for a case involving two seed shipments. The alleged violations were false labeling of the pure seed percentage and failure to label the germination percentage and name of the cowpea variety present in addition to the variety named on the label. Seed regulatory officials in Georgia and North Carolina cooperated in the initial sampling and inspection.

Additions and Deletions
Of
Plant Variety Protection
Certificates

PLANT VARIETY PROTECTION CERTIFICATES
(**Issued** August 1, 2001, through November 15, 2001)

KIND VARIETY	APPLICANT	TITLE V (GEN.)	1994 PVPA	KIND VARIETY	APPLICANT	TITLE V (GEN.)	1994 PVPA
BARLEY				CORN, FIELD			
6B94-8253	Busch Agricultural Resources, Inc.	Y (*)	Y	PH2VJ	Pioneer Hi-Bred International, Inc.	Y	Y
B1614ml	Busch Agricultural Resources, Inc.	Y (*)	Y	PH2VK	Pioneer Hi-Bred International, Inc.	Y	Y
Baretta	Arizona Plant Breeders, Inc.	Y (3)	Y	PH4TF	Pioneer Hi-Bred International, Inc.	Y	Y
CDC Kendall KEWAUNEE	Saskatchewan Wheat Pool Wisconsin Agricultural Experiment Station	Y (*) Y (2)	Y Y	PHMJ2	Pioneer Hi-Bred International, Inc.	Y	Y
Legacy	Busch Agricultural Resources, Inc.	Y (*)	Y	COTTON PM 330	Delta and Pine Land Company	Y	Y
Marlis	Busch Agricultural Resources, Inc.	Y (*)	Y	DOGSTAIL, CRESTED Shade Star	Pure Seed Testing, Inc.	Y	Y
MERIT	Busch Agricultural Resources, Inc.	Y (*)	Y	FESCUE, CHEWINGS Sandpiper	Seed Research of Oregon, Inc.	Y	Y
BEAN, GARDEN				FODDER RADISH COLONEL	Asmus Soren Petersen	Y (1)	Y
Beany Baby	Seminis Vegetable Seeds, Inc.	Y	Y	OAT Richard	Minnesota Agricultural Experiment Station	Y (3)	Y
CELERY				ORCHARDGRASS Megabite	Pure Seed Testing, Inc.	Y	Y
Sonora	Pybas Vegetable Seed Co., Inc.	Y	Y	POTATO ACCORD	C. Meijer B.V.	Y	Y
Sweet 16	Nunes Vegetables, Inc.	Y	Y	Carlita	HZPC Holland B.V.	Y	Y
CORN, FIELD				Divina	HZPC Holland B.V.	Y	Y
LH284	Holden's Foundation Seeds L.L.C.	Y	Y	KESTREL	Caithness Potato Breeders Ltd. C/o Caithness Potato Technology Inc.	Y	Y
ND281	NDSU Research Foundation	Y	Y	LADY CHRISTL	C. Meijer B.V.	Y	Y
ND282	NDSU Research Foundation	Y	Y	LADY CLAIRE	C. Meijer B.V.	Y	Y
PH0WE	Pioneer Hi-Bred International, Inc.	Y	Y	LADY OLYMPIA	C. Meijer B.V.	Y	Y
PH14T	Pioneer Hi-Bred International, Inc.	Y	Y	Lady Rosetta	C. Meijer BV	Y	Y
PH1B5	Pioneer Hi-Bred International, Inc.	Y	Y	NL10-ATL	Monsanto Company	Y	Y
PH1NF	Pioneer Hi-Bred International, Inc.	Y	Y	NL10-SUP	Monsanto Company	Y	Y
PH21T	Pioneer Hi-Bred International, Inc.	Y	Y	NL20-SHE	Monsanto Company	Y	Y
PH2CB	Pioneer Hi-Bred International, Inc.	Y	Y	Platina	HZPC Holland B.V.	Y	Y
				Red Bearl	Wisconsin Alumni Research Foundation	Y	Y

(*) No limit to the number of generations of certified seed beyond breeders seed.

PLANT VARIETY PROTECTION CERTIFICATES
(**Issued** August 1, 2001, through November 15, 2001)

KIND VARIETY	KIND VARIETY	APPLICANT	TITLE V (GEN.)	1994 PVPA	KIND VARIETY	APPLICANT	TITLE V (GEN.)	1994 PVPA
POTATO					SORGHUM			
RUSSET-NORKOTAH-SELECTION-3		President, Colorado Certified Potato Growers' Assn., Inc.		Y	PHWISBBI	Pioneer Hi-Bred International, Inc.		Y
RUSSET-NORKOTAH-SELECTION-8		President, Colorado Certified Potato Growers' Assn., Inc.		Y	PHWPAYVE	Pioneer Hi-Bred International, Inc.		Y
Valor		Caithness Potato Breeders LTD		Y	SOYBEAN 91B02	Pioneer Hi-Bred International, Inc.		Y
WINSTON		Caithness Potato Breeders Ltd.		Y	9492	Pioneer Hi-Bred International, Inc.		Y
RAPE					BM-7	Minnesota Agricultural Experiment Station	Y (2)	Y
Sterling		Idaho Agricultural Experiment Station	Y (2)	Y	N7001	North Carolina Agriculture Research Service	Y (*)	Y
RESCUEGRASS						U.S. Department of Agriculture/Agriculture Research Service and N.C. Agriculture Research Service	Y (*)	Y
Grasslands Dixon Lakota		AgResearch Limited	Y (1)	Y	NC-ROY	University of Georgia Research Foundation, Inc.	Y (2)	Y
SAFFLOWER S-780		AgResearch Limited	Y (1)	Y		South Carolina Agriculture and Forestry Research System G.	Y (2)	Y
		SeedTec International, Inc.	Y (3)	Y		Michael Watkins a S.C. Foundation Seed Association		
SORGHUM						South Dakota Agricultural Experiment Station	Y (*)	Y
PH005JLE		Pioneer Hi-Bred International, Inc.		Y	Prichard			
PH305LBE		Pioneer Hi-Bred International, Inc.		Y	SANTEE			
PHB74GM		Pioneer Hi-Bred International, Inc.		Y				
PHB7W7L		Pioneer Hi-Bred International, Inc.		Y	SD1091RR			
PHBRCOBXE		Pioneer Hi-Bred International, Inc.		Y	SUNFLOWER			
PHD80QFE		Pioneer Hi-Bred International, Inc.		Y	C9607CM	Pioneer Hi-Bred International, Inc.		Y
PHE30QFE		Pioneer Hi-Bred International, Inc.		Y	PHA283	Pioneer Hi-Bred International, Inc.		Y
PHI80MB		Pioneer Hi-Bred International, Inc.		Y	PHA305	Pioneer Hi-Bred International, Inc.		Y
PHIGAME		Pioneer Hi-Bred International, Inc.		Y	PHA319	Pioneer Hi-Bred International, Inc.		Y
PHKUOBBE		Pioneer Hi-Bred International, Inc.		Y	PHA344	Pioneer Hi-Bred International, Inc.		Y

(*) No limit to the number of generations of certified seed beyond breeders seed.

PLANT VARIETY PROTECTION CERTIFICATES
(**Issued** August 1, 2001, through November 15, 2001)

KIND VARIETY	APPLICANT	TITLE V (GEN.)	1994 PVPA	KIND VARIETY	APPLICANT	TITLE V (GEN.)	1994 PVPA
SUNFLOWER				WHEAT, COMMON			
PHB247	Pioneer Hi-Bred International, Inc.		Y	Dumas	Monsanto Company	Y (*)	Y
PHB339	Pioneer Hi-Bred International, Inc.		Y	Ember	South Dakota Agricultural Experiment Station	Y (*)	Y
RC103M	Pioneer Hi-Bred International, Inc.		Y	Ingot	South Dakota Agricultural Experiment Station	Y (*)	Y
				Kern	The Regents of the University of California	Y (*)	Y
SUNFLOWER (F1)				LA422	Louisiana Agricultural Experiment Station		Y
63A21	Pioneer Hi-Bred International, Inc.		Y	Mitchell	Monsanto Company	Y (*)	Y
63A30	Pioneer Hi-Bred International, Inc.		Y	MTHW9420	Research and Development Institute, Inc.	Y (3)	Y
63A70	Pioneer Hi-Bred International, Inc.		Y	NuHorizon	Monsanto Company	Y (*)	Y
63M80	Pioneer Hi-Bred International, Inc.		Y	Patriot	Dr. Peter Franck	Y (3)	Y
63M91	Pioneer Hi-Bred International, Inc.		Y	Prowers 99	Colorado Wheat Research Foundation	Y (3)	Y
64H61	Pioneer Hi-Bred International, Inc.		Y	Ransom	NDSU Research Foundation		Y
				Roberts	University of Georgia	Y (2)	Y
TIMOTHY					Research Foundation, Inc. (UGARF) and Florida		
Aurora	HOKUREN-Federation of Agriculture Cooperatives	Y (3)	Y		Agricultural Experiment Station (FAES)		
				Scarlet	Washington State University Research Foundation	Y (*)	Y
WATERMELON							
4N63	Abbott & Cobb, Inc.		Y	Sisson	Virginia Tech Intellectual Properties, Inc.	Y (3)	Y
WHEAT, COMMON							
518W	University of Georgia Research Foundation, Inc. (UGARF) and Florida		Y	Stander	Resource Seeds, Inc.		Y
	Agricultural Experiment Station (FAES)			TAM 400	Texas Agricultural Experiment Station	Y (3)	Y
Bavaria	Michigan Agricultural Experiment Station	Y (1)	Y	USG 3209	Virginia Tech Intellectual Properties, Inc.	Y (2)	Y
Bonus	Resource Seeds, Inc.		Y				
Buck Pronto	Buck Semillas S.A.	Y (3)	Y	Weatherford	State of Oregon, by and through the State Board of Higher Education on behalf of Oregon State University		Y
Caudillo	Buck Semillas S.A.	Y (3)	Y				
Century II	Virginia Tech Intellectual Properties, Inc.	Y (2)	Y				
Coker 9025	Syngenta seeds, Inc.	Y (3)	Y				

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PLANT VARIETY PROTECTION CERTIFICATES
(Issued August 1, 2001, through November 15, 2001)

KIND VARIETY	APPLICANT	TITLE V (GEN.)	1994 PVPA	KIND VARIETY	APPLICANT	TITLE V (GEN.)	1994 PVPA
WHEAT, COMMON Winsome	CIMMYT (International Center for Wheat and Maize Improvement) State of Oregon, Acting by and through the State Board of Higher Education on behalf of Oregon State University	Y (*)	Y				
WHEAT, DURUM Crown Lebsock Platinum Plaza	World Wide Wheat, L.L.C. NDSU Research Foundation World Wide Wheat, L.L.C. NDSU Research Foundation	Y (3) Y (*) Y (3) Y (*)	Y Y Y Y				

TITLE V 1994
(GEN.) PVPA

(*) No limit to the number of generations of certified seed beyond breeders seed.

PLANT VARIETY PROTECTION CERTIFICATES
(**Expired** August 1, 2001, through November 15, 2001)

KIND VARIETY	APPLICANT	TITLE V (GEN.)	1994 PVPA	KIND VARIETY	APPLICANT	TITLE V (GEN.)	1994 PVPA
BUCKWHEAT				SOYBEAN			
Winsor Royal COTTON	Winsor Grain, Inc.			Mitchell 410	Novartis Seeds, Inc.		
7563	Delta and Pine Land Company			RA-403	Novartis Seeds, Inc.		
Cascot C-13	Custom Ag Service Inc.			RA-502	Novartis Seeds, Inc.		
Coker 208	Stoneville Pedigreed Seed Company, Inc.	Y (3)		RA-606	Novartis Seeds, Inc.		
Coker 500	SeedCo Corporation			S72-60	Novartis Seeds, Inc.		
Deltapine NSL	Delta and Pine Land Company			Terra-Vig 505	Terral-Norris Seed Company, Inc.	Y (3)	
GP 1005	G&P Seed Company, Inc.	Y (3)					
GP 5479	G&P Seed Company, Inc.	Y (3)					
KLEINGRASS							
Verde	Texas Agricultural Experiment Station	Y (2)					
LAURISAGRASS							
Cowboy	G. E. Pogue Seed Company, Inc.	Y (3)		TOBACCO			
LETTUCE				Coker 176	Novartis Seeds, Inc.	Y (3)	
Van Mor	Harris Moran Seed Company						
PEA							
Sundance	Pure Line Seeds, Inc.						
Superscout	Crites-Moscow Growers, Inc.						
Sweet Snap	Novartis Seeds, Inc.						
SOYBEAN							
1282	Pioneer Hi-Bred International, Inc.						
90210-30266	Midwest Oilseeds, Inc.						
Birch	Illinois Foundation Seeds, Inc.	Y (2)					
Coker 368	Novartis Seeds, Inc.	Y (3)					
CS24	Callahan Enterprises, Inc.						
DSR-320	Dairyland Seed Company, Inc.	Y (2)					
DSR-352	Dairyland Seed Company, Inc.	Y (2)					
L4204	Land O'Lakes, Inc.						

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